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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/870,498	06/01/2001	Adilson Leite	FAPESP 203	8814

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EXAMINER	
SRIVASTAVA, KAILASH C	
ART UNIT	**PAPER NUMBER**
1657	
MAIL DATE	**DELIVERY MODE**
05/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/870,498	LEITE ET AL.	
	Examiner	Art Unit	
	Dr. Kailash C. Srivastava	1657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 17-28* is/are pending in the application.

4a) Of the above claim(s) *1-4 and 17-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicants' responsive communication filed 07 February 2007 in response to Office Action mailed 11 September 2206 and the telephone interview of 6 February 2007 is acknowledged and entered.

2. In view of applicants' amendments and remarks filed 07 February 2007, the objection to claim 29 in the Office Action cited supra is herewith withdrawn.

3. In view of applicants' amendments and remarks filed 07 February 2007, the following rejections in the Office Action mailed 11 September 2006 are hereby withdrawn:

- Written description rejection to Claims 5-7 and 29 under 35 U.S.C.§112, first paragraph;
- Indefiniteness rejection to Claim 7 under 35 U.S.C.§112, second paragraph; and
- Obviousness rejection to Claims 5-7 and 29 under 35 U.S.C. § 103 (a) as obvious over the combined teachings from Ford et al. (US Patent 6,497,870 B1) in view of Aley et al (Infection and Immunity, 1994, Volume 62, pages 5397-5403) and Janoff et al. (U S Patent 5,766,624) with evidence provided by De Samblanx et al (U.S. Patent 6,372, 888 B1).

4. Applicants' arguments pertaining to following rejections in response filed 07 February 2007 to Office Action mailed 11 September 2006 are moot because following objections and rejections in the Office Action mailed 11 September 2006 have been withdrawn in the instant Office Action:

- objection to Claim 29; and
- rejections to Claims 5-7 under 35 U.S.C.§112, 1st and 2nd paragraphs and under 35 U.S.C.§103(a).

5. The Art Unit Location for your application under prosecution at the United States Patent and Trademark Office (i.e., USPTO) has been changed to Art Unit 1657. To aid in correlating any papers for this application (i.e., 09/870,498), all further correspondence regarding this application should be directed to Examiner Kailash C. Srivastava in Art Unit 1657.

6. Please note that upon arrival at the USPTO, each response/filing is sorted according to claims, remarks, amendment, transmittal etc. for scanning coding and incorporation in to the Electronic File Wrapper (i.e., IFW). In order to ensure that all the papers pertaining to a particular application are properly coded in the same application electronic file wrapper, and to further facilitate the prosecution;

especially during a telephonic conversation/interview with applicant/applicants' representative, it is suggested that the following information be recited in the header of each page for any filing/response/amendment:

a. U.S. Non-Provisional Application Serial Number (e.g. 00/000,000);
b. Filing date for said application (e.g., 17 November 2002);
c. First Applicant's name (e.g., Smith Jones et al.);
d. Attorney Docket Number;
e. Group Art Unit Number (e.g., 1657);
f. Examiner's name (e.g., Dr. Kailash C. Srivastava);
g. Date of Office Action being responded to (e.g., 27 August 2006); and
h. Date of amendment/response (e.g., 27 April 2007)

Papers/responses filed according to above-stated guidelines immensely ameliorate the chances of papers lost during transaction/transmission, coding, indexing and placing the papers in IFW.

Claim Status

7. Claims 9-16 and 29 have been cancelled.

8. Claims 1 and 28 have been amended.

9. Claims 1-8 and 17-28 are pending.

10. Claims 1-4 and 17-28 stand withdrawn.

11. Claims 5-8 are examined on merits.

12. Applicants are notified that the presentation of current set of claims accompanying applicants' response filed 07 February 2007 to Office Action mailed 11 September 2006 is not in accordance with the Rules effective July 2003 (See M.P.E.P., 714 [R-3]. IIC (A) Amendments) because Claims 1-4 and 17-28 stand withdrawn despite being previously presented. Therefore, the current status of Claims 1-4 and 17-28 is "withdrawn". According to new regulations on claim presentation, the claim status should be indicated by using one of the following identifiers in a parenthetical expression: (Original), (Currently amended), (Canceled), (Withdrawn), (Previously presented), (New), and (Not entered). Please present he current

status of all un-cancelled claims in response to instant Office action. Not withstanding the foregoing non-compliance to claim rules, and to furthering the prosecution of instant application, a detailed Office Action follows.

Claim Rejections - 35 U.S.C. §112

13. The following is a quotation of the first paragraph of 35 U.S.C. §112:

> ***The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.***

14. The following is a new rejection to Claims 5-8 under 35 U.S.C. §112, first paragraph.

15. Claims 5-8 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The MPEP states that the purpose of the written description requirement is to ensure that the inventor had possession; at the time the invention was made, of the specific subject matter claimed. The courts have stated:

"To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude, "the inventor invented the claimed invention." Lockwood v. American Airlines, Inc., 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997); In re Gostelli, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) ("[T] he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." Lockwood, 107 F.3d at 1572, 41 USPQ2d at 1966." Regents of the University of California v. Eli Lilly & Co., 43 USPQ2d 1398.

Further, for a broad generic claim, the specification must provide adequate written description to identify the genus of the claim. In Regents of the University of California v. Eli Lilly & Co. the court stated:

"A written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials." Fiers, 984 F.2d at 1171, 25 USPQ2d 1601; In re Smythe, 480 F.2d 1376, 1383, 178 USPQ 279, 284985 (CCPA 1973) ("In other cases, particularly but not necessarily, chemical cases, where there is unpredictability in performance of

certain species or sub-combinations other than those specifically enumerated, one skilled in the art may be found not to have been placed in possession of a genus...") Regents of the University of California v. Eli Lilly & Co., 43 USPQ2d 1398.

MPEP §2163 further states that if a biomolecule is described only by a functional characteristic, without any disclosed correlation between function and structure of the sequence, it is "not sufficient characteristic for written description purposes, even when accompanied by a method of obtaining the claimed sequence." MPEP §2163 does state that for a generic claim the genus can be adequately described if the disclosure presents a sufficient number of representative species that encompass the genus. If the genus has a substantial variance, the disclosure must describe a sufficient variety of species to reflect the variation within that genus. See MPEP § 2163. Although the MPEP does not define what constitutes a sufficient number of representative species, the courts have indicated what does not constitute a representative number of species to adequately describe a broad generic. In Gostelli, the courts determined that the disclosure of two chemical compounds within a subgenus did not describe that subgenus. In re Gostelli, 872, F.2d at 1012, 10 USPQ2d at 1618.

The factors considered in the Written Description requirement are:(1) level of skill and knowledge in the art, (2) partial structure, (3) physical and/or chemical properties, (4) functional characteristics alone or coupled with a known or disclosed correlation between structure and function, and the (5) method of making the claimed invention. Disclosure of any combination of such identifying characteristics that distinguish the claimed invention from other materials and would lead one of skill in the art to the conclusion that the applicant was in possession of the claimed species is sufficient." (MPEP §2163).

In the instant case, the claims are drawn to the genus of an isolated antimicrobial peptide consisting of from 10 to about 50 amino acids, wherein said peptide genus comprises 10 to about 12 continuous amino acids, wherein a given number of those contiguous amino acids are hydrophobic residues, at least one a histidine, glutamic acid or serine with the proviso that two of the hydrophobic amino acids are adjacent tryptophans. the isolated peptide comprises amino acid sequence set forth in SEQ. ID number 1, or a conservative variant thereof. Additionally the claimed invention is to an analog of the peptide described above, wherein said analog also has the same antimicrobial activity. The claimed invention is assessed as follows with regard to the written description factors listed *supra*.

(a) Level of skill and knowledge in the art:

At least a Bachelor Degree in Biochemical engineering, Biochemistry, Biology, Biophysics, Chemistry, Microbiology, Molecular biology, or pharmaceutical sciences.

(b) Partial structure:

The specification citing Accession Numbers states that the amino acid sequences (i.e., partial structure) of the peptide are known in the art as to be SEQ. I.D. number 1. However, there is no description regarding the variants of said peptide or analogs thereof as to which sequence represents

which variant or analog, nor is there any guidance to determine the sequence of a given variant or analog. Thus, whereas the variants and analogs of said peptide can be any number of peptide, given that each amino acid residue of said peptide may be substituted with one or more amino acids and amino acid analogs, the changes brought about in structure of said peptide because of deletions, additions or substitutions has not been described. Thus, the structure for variants and analogs for said peptide has not been elaborated. The Claims as presented currently are drawn to a number of species of a Genus of peptides without elaborating in the specification as presented currently the structure or properties of enough numbers of exemplary peptides to represent the claimed genus of peptides.

(c) Physical and/or chemical properties:

The physical and chemical properties of the claimed peptide are described only in terms of the claimed peptide having SEQ. I.D. 1. However, as explained in item © above, the properties of other variants or analogs because of substitutions or deletions is not clearly defined.

(d) Functional characteristics:

The specification only provides that the isolated peptide having the description given in claim 5 has an antimicrobial activity. However, the description does not define the structure function relationships of the variants or analogs. Said property can not even be predicted for the entire Genus of claimed peptides based on the property of claimed antimicrobial property because it is art known that the deletions, substitutions, or variations to create variants and analogs bring about changes in the structure/function relationships of peptides and sometimes a property of importance given in a peptide is altogether lost in a variant of said peptide because of the substitution/deletion required to create said variant.

(e) Method of making the claimed invention:

Despite providing a limited guidance to create the claimed peptide, the specification does not elaborate on the creation of variants or analogs of the claimed antimicrobial peptide. .

As stated *supra*, the MPEP states that written description for a genus can be achieved by a representative number of species within a broad genus. Claims 6-8 are broadly generic to all possible variants and analogs of the claimed isolated polypeptide in Claim 5. The possible variations are enormous to any class of polypeptides. Since the MPEP states that if a biomolecule is described only by a functional characteristic, without any disclosed correlation between function and structure, it is "not sufficient characteristic for written description purposes, even when accompanied by a method of

obtaining the claimed sequence." MPEP § 2163. Here, though the claims may recite some functional characteristics, the claims lack written description because there is no disclosure of a correlation between function and structure of the claimed variants and analogs of the isolated peptide described in claim 5. Moreover, the specification lacks sufficient variety of species to reflect this variance in the genus since the specification does not provide any examples of isolating the claimed variants and analogs for said peptide.

While having written description of claimed peptides identified in the specification, the specification is devoid of a description to obtain variants/analogs that qualify for the functional characteristics, i.e., antimicrobial property claimed.

The description requirement of the patent statute requires a description of an invention, not an indication of a result that one might achieve if one made that invention. See In re Wilder, 736, F.2d 1516, 1521, 222 USPQ 369, 372-73 (Fed. Cir. 1984) (affirming rejection because the specification does "little more than outlin [e] goals appellants hope the claimed invention achieves and the problems the invention will hopefully ameliorate.") Accordingly, it is deemed that the specification fails to provide adequate written description for the genus of the claims and does not reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the entire scope of the claimed invention.

16. Claims 5-8 are rejected under 35 U.S.C. §112, first paragraph, as containing subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with those claims. The claims are drawn to the genus of an isolated antimicrobial peptide consisting of from 10 to about 50 amino acids, wherein said peptide is comprised of 10 to about 12 continuous amino acids. Furthermore, a given number of those contiguous amino acids are hydrophobic residues, at least one a histidine, glutamic acid or serine residue with the proviso that two of the hydrophobic amino acids are adjacent tryptophans. The isolated peptide comprises amino acid sequence set forth in SEQ, ID number 1, or a conservative variant thereof. Additionally the claimed invention is to an analog of the peptide described above, wherein said analog also has the same antimicrobial activity.

From the record of the present written disclosure, the specification, while enabling for the claimed peptide in claim 5 does not gives any indication for the variants or analogs thereof, because as illustrated above, there is no description to prepare a composition comprising an isolated peptide that would be variant or analog of the claimed peptide comprised of from 10-50 amino acids. Furthermore, from the record of the present disclosure the variants and analog are also not enabling because absent the amino acid sequence and detailed structure for said N-terminal fragment of those variants, there is no

disclosure describing how said variants or analogs would stably demonstrate the information to have said structure function property for one of skill to practice the claimed invention.

A person of skill would not be able to practice the invention because undue experimentation will be required to obtain a composition comprising claimed variant or analog thereof cited supra due to the quantity of experimentation necessary; limited amount of guidance and limited number of working examples in the specification; nature of the invention; state of the prior art; relative skill level of those in the art; predictability or unpredictability in the art; and breadth of the claims. In re Wands, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) as illustrated below.

(a) Quantity of Necessary Experimentation

Since the specification does not provide any detailed information on obtaining said variants or analogs, an artisan of ordinary skill would have to make a number of permutations and combinations comprising deleting and or substituting each and every one of 10-50 amino acids of said disclosed peptide in the specification to obtain a variant/analog of peptides and further test each and every fragment to determine the structure-function relationships of each fragment to obtain one having the claimed antimicrobial activity of the peptide of sequence I.D. 1.

(b) Limited Amount of Guidance

The specification as currently presented does not provide a clear-cut guidance for any thing but the isolated peptide claimed in claim5 and therefore, no guidance to isolate variants and analogs of said peptide from a number of potential variants and analogs of said peptide.

(c) Limited Number of Working Examples in the Specification

The specification does not provide any specific example to isolate a variant or an analog of the claimed isolated peptide.

(d) Nature of the Invention

The invention is particularly drawn to a composition comprising an isolated antimicrobial peptide having seq. I. D. 1.

(e) State of the Prior Art

The specification as currently presented recites prior art references (e.g., Page 4, Lines 10 and 28) describing methods to prepare a variety of variants of a peptide having amino acid sequence of SEQ ID Number 1. However, the description does not provide enough details to

apply those prior art reference methods to obtain claimed variants and analogs of antimicrobial peptide claimed in Claim 5.

(f) Relative Skill Level of those in the Art

At least a Bachelor Degree in Biochemistry, Chemistry, Microbiology or Molecular biology.

(g) Predictability or Unpredictability in the Art

In the instant case, since only one species of peptide is disclosed, it cannot be predicted that any variant or analog of said peptide would have the required properties/function or activity of the claimed material, because unless supported with illustrative experimental evidence, biological responses are unpredictable. Thus, information obtained under one set of detrimental parameters may not be extrapolated for another set of parameters/environmental or specific conditions.

(h) Breadth of the Claims

At least Claims 5-7 are broad as they are drawn to any variant or analog of isolated antimicrobial peptide claimed in Claim 5, wherein said peptide has amino acid sequence set forth in SEQ ID No. 1. Thus the variants and analogs denotes any range of peptide variants or analogs having identifying properties of SEQ ID No 1.

Conclusion

17. For aforementioned reasons, no Claims are allowed.

Since claims drawn to a composition in Claims 5-8 are not allowed, applicants' argument regarding point 14 of the restriction requirement regarding joining invention claimed in Claims 1-4 and 17-28 is not persuasive and therefore Claims 1-4 and 17-28 remain withdrawn at this time.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Kailash C. Srivastava whose telephone number is (571) 272-0923. The examiner can normally be reached on Monday to Thursday from 7:30 A.M. to 6:00 P.M. (Eastern Standard or Daylight Savings Time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Jon Weber can be reached at (571)-272-0925 Monday through Thursday 7:30 A.M. to 6:00 P.M. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding may be obtained from the Patent Application Information Retrieval (i.e., PAIR) system. Status information for the published applications may be obtained from either Private PAIR or Public PAIR. Status information for

unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (i.e., EBC) at: (866)-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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April 30, 2007

CHRISTOPHER R. TATE
PRIMARY EXAMINER